

What is claimed:

1. An isolated nucleic acid molecule which encodes a RAC3 protein,
5 comprising a nucleotide sequence at least about 70% homologous to a nucleotide
sequence of SEQ ID NO:1, or a complement thereof.
2. The isolated nucleic acid molecule of claim 1 comprising the coding
sequence of SEQ ID NO:1, or a complement thereof.
- 10 3. The isolated nucleic acid molecule of claim 2, further comprising about
nucleotides 1922-2341 of SEQ ID NO:1.
4. The isolated nucleic acid molecule of claim 2, further comprising about
15 nucleotides 3136-3622 of SEQ ID NO:1.
5. The isolated nucleic acid molecule of claim 1 comprising the nucleotide
sequence of SEQ ID NO:1 or a complement thereof.
- 20 6. The isolated nucleic acid molecule of claim 1, further comprising about
nucleotides 1922-2341 and 3136-3622 of SEQ ID NO:1.
7. The isolated nucleic acid molecule of claim 1, having a RAC3 activity.
- 25 8. An isolated nucleic acid molecule comprising a nucleotide sequence
encoding a protein which comprises an amino acid sequence at least about 70%
homologous to the amino acid sequence of SEQ ID NO:2.
9. An isolated nucleic acid molecule comprising a nucleotide sequence
30 encoding a protein which comprises the amino acid sequence of SEQ ID NO:2.
10. An isolated nucleic acid molecule encoding a RAC3 protein comprising a
nucleotide sequence which hybridizes under stringent hybridization conditions to a
nucleic acid molecule comprising the nucleotide sequence of SEQ ID NO:1.
- 35 11. An isolated nucleic acid molecule at least 500 nucleotides in length
which hybridizes under stringent hybridization conditions to a nucleic acid molecule
comprising the nucleotide sequence of SEQ ID NO:1.

12. The isolated nucleic acid molecule of claim 1, which specifically detects a RAC3 nucleic acid molecule relative to a nucleic acid molecule encoding a non-RAC3 protein.

13. An isolated nucleic acid molecule which is antisense to the nucleic acid molecule of claim 1.

14. A vector comprising the nucleic acid molecule of claim 1.

15. The vector of claim 14, which is a recombinant expression vector.

16. A host cell containing the vector of claim 15.

17. A method for producing RAC3 protein comprising culturing the host cell of claim 16 in a suitable medium until RAC3 protein is produced.

18. The method of claim 17, further comprising isolating RAC3 protein from the medium or the host cell.

19. A nonhuman transgenic animal which contains cells carrying a transgene encoding RAC3 protein.

20. A nonhuman homologous recombinant animal which contains cells having an altered RAC3 gene.

21. An isolated RAC3 protein comprising an amino acid sequence at least about 60% homologous to the amino acid sequence of SEQ ID NO:2.

22. An isolated RAC3 protein which is encoded by a nucleic acid molecule comprising a nucleotide sequence at least about 60% homologous to a nucleotide sequence of SEQ ID NO:1, or a complement thereof.

23. An isolated RAC3 protein which is encoded by a nucleic acid molecule comprising a nucleotide sequence which hybridizes under stringent hybridization conditions to a nucleic acid molecule comprising the nucleotide sequence of SEQ ID NO:1 or the coding region of SEQ ID NO:1.

24. An isolated RAC3 protein which is encoded by a nucleic acid molecule comprising a nucleotide sequence which hybridizes under stringent hybridization conditions to a nucleic acid molecule comprising the nucleotide sequence of SEQ ID NO:1.

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25. An isolated protein comprising an amino acid sequence sufficiently homologous to the amino acid sequence of SEQ ID NO:2, wherein the protein retains a RAC3 biological activity.

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26. The isolated protein of claim 25, comprising an amino acid sequence 60% homologous to an amino acid sequence of SEQ ID NO:2.

27. The isolated protein of any of claim 26, comprising at least one RAC3 domain.

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28. An isolated protein comprising the amino acid sequence of SEQ ID NO:2.

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29. A fusion protein comprising a RAC3 polypeptide operatively linked to a non-RAC3 polypeptide.

30. The fusion protein of claim 29, wherein the RAC3 polypeptide comprises a RAC3 domain.

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31. An antibody that specifically binds a RAC3 protein.

32. The antibody of claim 31, which is monoclonal.

33. The antibody of claim 32, which is labeled with a detectable substance.

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34. A pharmaceutical composition comprising the protein of claim 27 and a pharmaceutically acceptable carrier.

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35. A pharmaceutical composition comprising the antibody of claim 31 and a pharmaceutically acceptable carrier.

36. A method for modulating a cell-associated activity comprising contacting a cell with an agent which modulates RAC3 protein activity or RAC3 nucleic acid

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expression such that the cell-associated activity is altered relative to the cell-associated activity of the cell in the absence of the agent.

37. A method for treating a subject having a disorder characterized by
5 aberrant RAC3 protein activity or nucleic acid expression comprising administering to the subject a RAC3 modulator such that treatment of the subject occurs.

38. A method for detecting the presence of RAC3 activity in a biological
sample comprising contacting a biological sample with an agent capable of detecting an
10 indicator of RAC3 activity such that the presence of RAC3 activity is detected in the biological sample.

39. A kit for detecting the presence of RAC3 activity in a biological sample
comprising an agent capable of detecting an indicator of RAC3 activity in a biological
15 sample.

40. A diagnostic assay for identifying a genetic alteration in a cell sample,
the presence or absence of the genetic alteration characterized by at least one of (i)
aberrant modification or mutation of a gene encoding a RAC3 protein, and (ii) mis-
20 regulation of said gene or (iii) aberrant post-translational modification of a RAC3 protein.

41. A method for identifying a compound that modulates the activity of a
RAC3 protein, comprising:

- 25 a. providing an indicator composition comprising a protein having RAC3 activity;
- b. contacting the indicator composition with a test compound; and
- c. determining the effect of the test compound on RAC3 activity in
the indicator composition to thereby identify a compound that modulates the activity of
30 a RAC3 protein.

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